“Discovery to Deployment”

(S&T must address near-term objectives & long-term challenges)

How we work:

Present . . .

Today’s Navy and Marine Corps

- **Naval Research Enterprise**
- **Technology Solutions**
- **NR-Stat**
- **Swampworks**

~2%

5 Years . . .

The Next Navy and Marine Corps

- **Requirements-Driven FNCs**
- **Transformational Technologies**
- **Fleet/Force Experimentation**

~50%

5 ⇨ 20 Years . . .

Navy and Marine Corps **After Next**

- **Idea Exploration**
- **Naval Unique / Essential**
- **Grand Challenges**

~48%

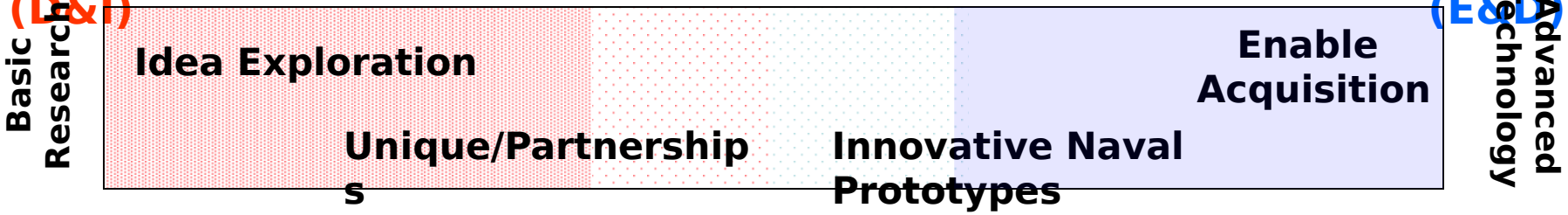
6.3	6.2	6.1
Exploitation & Deployment		Discovery & Invention

Note: Percentages indicate approximate division of total DoN S&T annual investment in each area. Updated 22 Apr 2003

ONR Strategic Investment Scheme

Discovery and Invention (D&I)

Exploitation and Deployment (E&D)



Naval Research Diversity (Idea Exploration)

- Science shortfalls in topics with Naval interest
- Nurturing science opportunity
- High impacts/surprises

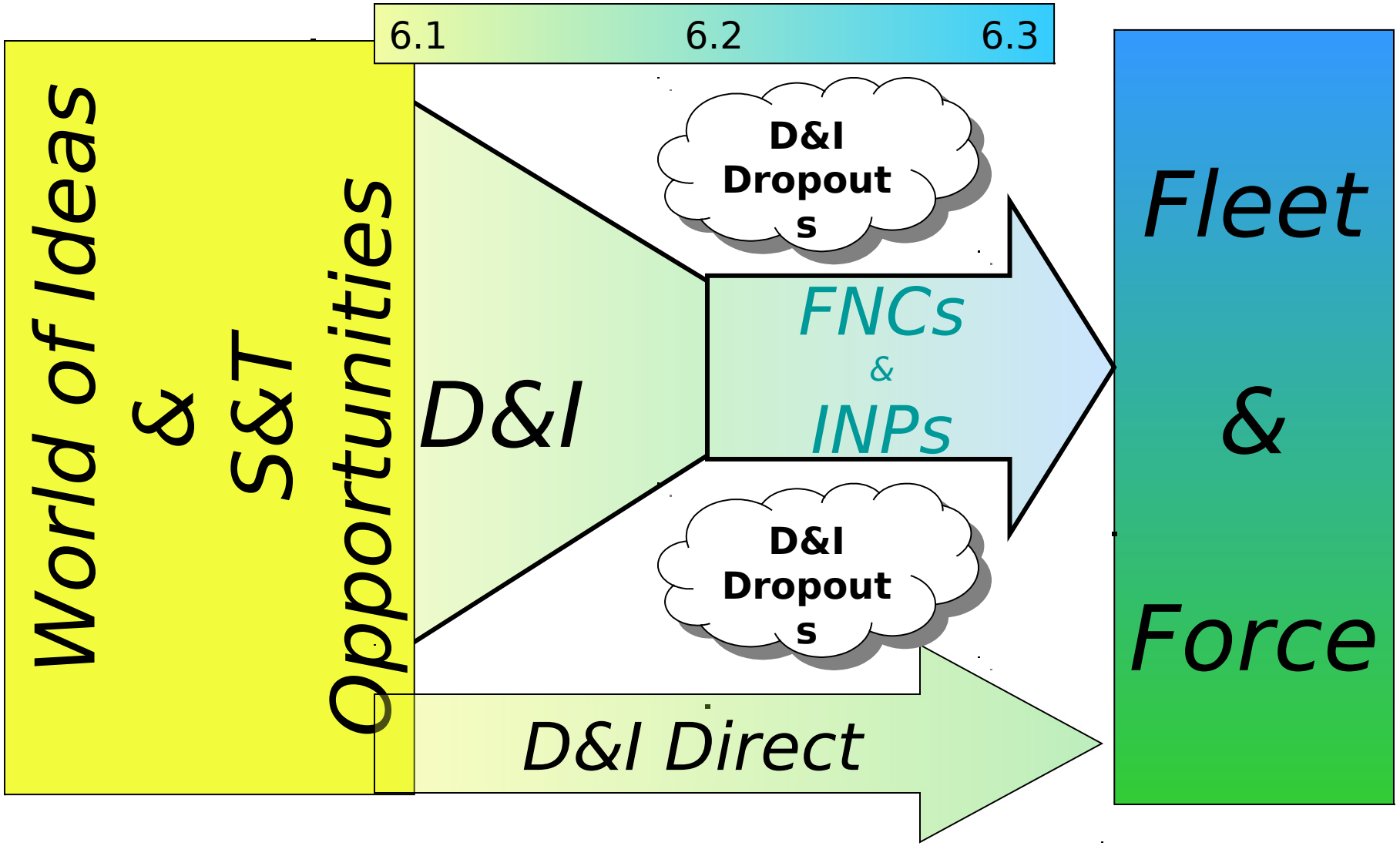
Naval Unique/Partnerships

- National Naval Responsibilities
- Core Competencies
- Health of Academic pipeline – ideas/workforce

Accelerating Discovery into Innovative Technology

- S&T specifically focused on enabling capability
- Harvest other agency S&T toward Naval applications

Overall DoN S&T Product Flow



S&T POM 06 Investment Areas

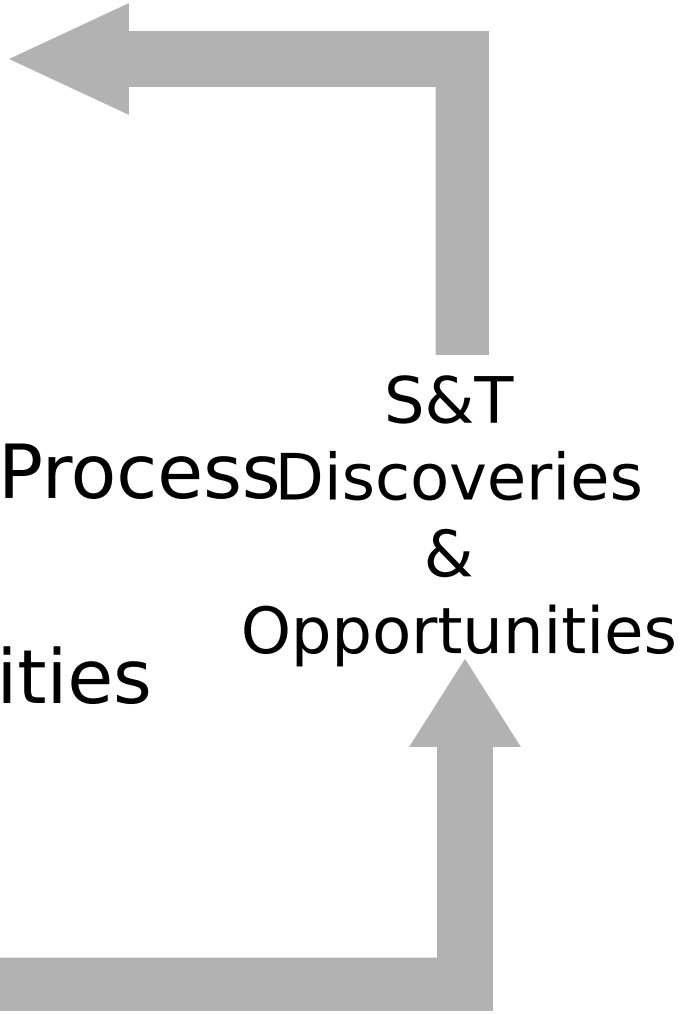
FY 06 $1,776M

Naval Power 21 Acquisition Enablers ($551M – 31%) • FNC's (TOG Oversight) • Warfighter Protect • Capable Manpower (N1/N00T) • LO/CLO (PMR 51) • GPS (enhancement) • InfoSecurity Protect (N6/SPAWAR) • USCG Vessel Tracking (ASN(RDA))	**Discovery & Invention ($713M - 40%)** • Naval scientific disciplines • NRL/Warfare Centers • National Naval Responsibilities • HM&E (facts of life) • Technical workforce sustainment • High impacts/surprises
OSD Directed ($330M – 19%) • JFCOM's Joint Experimentation • POM-04 PDM (except EM Rail Gun) • PBD's and earmarks	**Leap-ahead Innovations ($182M -10%)** • Innovative Naval Prototypes • Swampworks • Tech Solutions • SEA TRIAL • Fleet/Force Response Programs

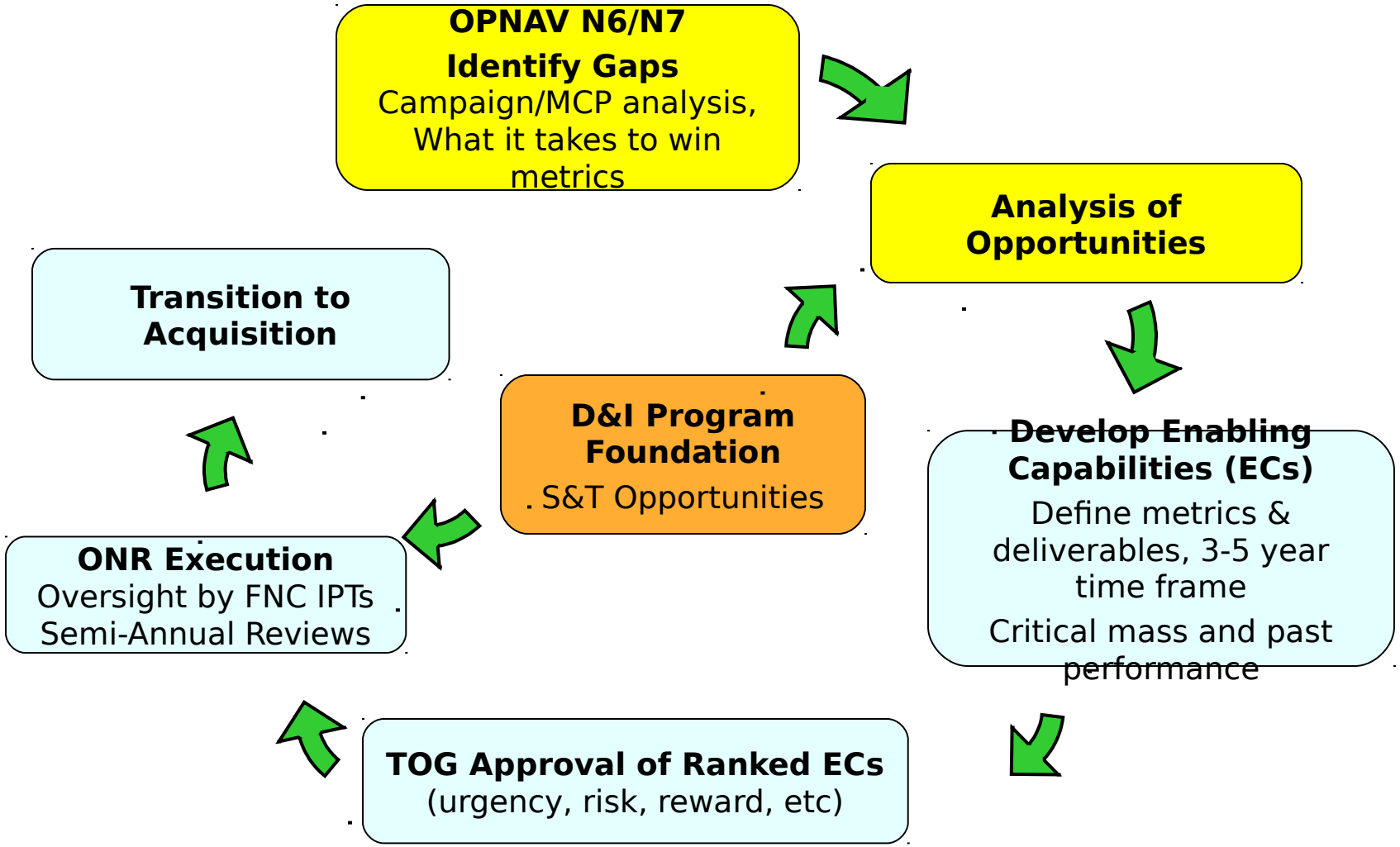
D&I Investment

DoN Vision – Naval Needs – S&T Opportunity

- DoN Vision & Guidance
- Naval Power 21
- Capability Development Process
- S&T Options & Opportunities
- D&I Investment Process

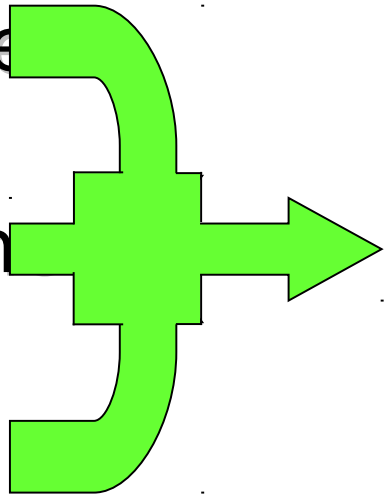


D&I to FNC Process



Key S&T Pathways to Resolving IED Threat

- Detection at a Distance
- Destruction at a Distan
- Defeat at a Distance



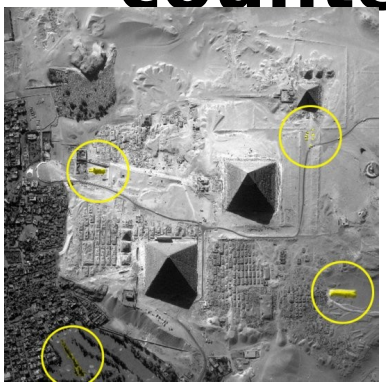
Deter

Examine entire IED delivery chain to develop systematic countermeasures

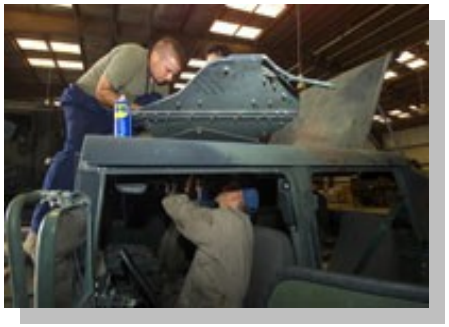
Obtain Funds

Develop Organization

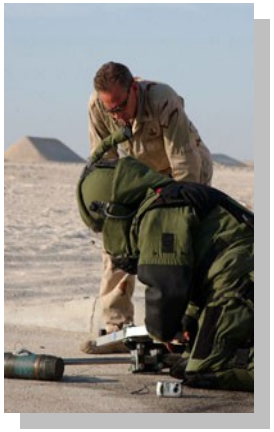
Gather & Provide Material



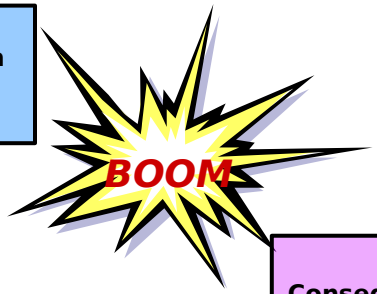
Improvise CONOPS/ Tactics/ Devices



Plan Attacks



Perform Attacks



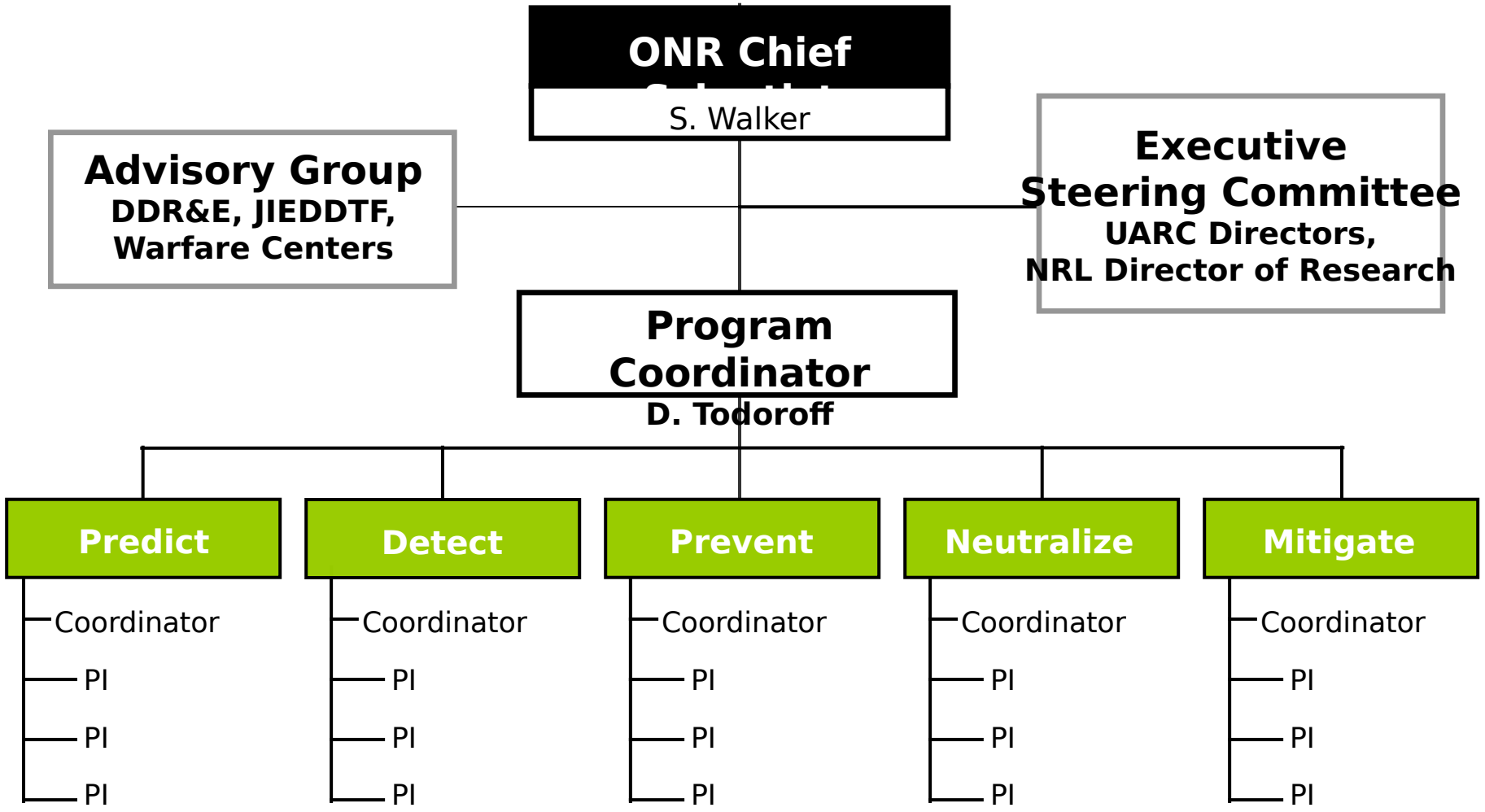
Consequence Management

Attribution

Counter-IED Strategic Research Vision

STAGE	Predict	Detect	Prevent	Neutralize	Mitigate
CAPABILITIES	• HUMINT • PSY OPS • Behavioral Pattern Recognition • ISR / COMMS • Forensic Analysis	• Sensors • Stand-off Detection • False Alarm Reduction • Pattern Recognition • Remote Surveillance	• Deny enemy comms • Deny enemy free movement • Deny enemy ISR • Control access to materials • Jamming	• Render IED safe • Disposal • Controlled Detonation • Forensic collection • Enemy Interdiction	• Blast resistance • Blast containment • First responders • Medevac • Information Operations
RESEARCH THRUSTS	• Psychology & Sociology of Terrorists • Information Management • Pattern Recognition • Artificial Intelligence • Explosive Characterization	• Sensor Technologies • Signal Processing • Data Fusion • Pattern Recognition • Autonomous System Technologies	• RF Communications • Non- Lethal Weapons • Information Management • Artificial Intelligence	• Chemistry /Physics of Explosives • Energy-based Weapons • Autonomous System Technologies • Tagging / Marking	• Protective Structures • Armor • Knowledge Management • Information Technology

Counter-IED Organization



DEPARTMENT OF THE NAVY
ONR
USN
Science & Technology

Session IIIB: S&T Executive Perspectives on Getting Technology to the Warfighter

This session will focus, from an S&T perspective, on potential roadblocks to getting technology to the warfighter. Specific issues to be addressed are the right balance between technology transfer and technology base, the proper organizational structure for S&T, the role of industry, challenges for collaborative S&T, and how the S&T community fits in the new approach to capabilities based planning and acquisition. The panel format will be questions posed by the chair with point/counter-point discussion from the panel.

Co-Chairs: Colonel Mark Stephen, USAF, Chief, Science and Technology Division, SAF/AQRT
Dr. John Solomond, Program Manager C4ISR, Booze Allen Hamilton

Moderator: Mr. James Engle, Deputy Assistant Secretary of the Air Force (Science, Technology & Engineering)

3:45 pm

Dr. Charles Holland, DUSD (Science & Technology)
Dr. Tom Killion, Deputy Assistant Secretary of the Army (Research & Technology)
Dr. Starnes Walker, Chief Scientist, ONR
Dr. Robert Leheny, Deputy Director, DARPA
Ms. Sue Payton, DUSD (Advanced Systems & Concepts)

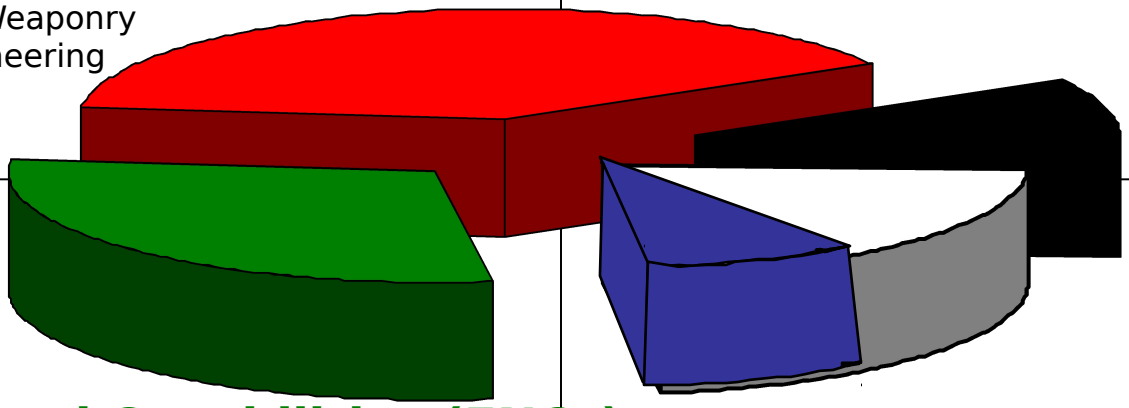
S&T Investment Categories

Discovery & Invention (D&I)

- NRL Base Program
- Science shortfalls in topics with Naval interest
- Nurturing science opportunity
- High impacts/surprises
- Health of Academic pipeline – ideas/workforce
- National Naval Responsibilities
  - Ocean Acoustics
  - Undersea Weaponry
  - Naval Engineering
  - Naval Air (proposed)

Innovative Naval Prototypes (INPs)

- *TBD*



Future Naval Capabilities (FNCs)

- Time Critical Strike (TCS)
- Organic Mine Countermeasures (OMCM)
- Knowledge Superiority & Assurance (KSA)
- Littoral Antisubmarine Warfare (LASW)
- Expeditionary Logistics (ExLog)
- Fleet/Force Protection (FFP)
- Littoral Combat and Power Projection (LCCP)
- Missile Defense (MD)
- Advanced Capability Electric systems (ACES)
- Autonomous Ops (AO)
- Total Ownership Cost Reduction (TOC)
- *Capable Manpower (CM)*
- *Warfighter Protection (WP)*

Quick Reaction and Other

Quick Reaction

- Swampworks
- Tech Solutions
- MCWL

Other

- Pass-Through - to JFCOM
- OSD Directed
- Infrastructure - Efforts enabling ONR's mission execution such as IFO, conferences, outreach